

CLAIMS

1. A conditional access subunit for connection to an IEEE 1394 network, the subunit including:

5 means to receive AV/C Conditional Access Commands over the IEEE 1394 network from another subunit; and

means to transmit AV/C responses over the IEEE 1394 network in response to the received AV/C Conditional Access Commands.

2. A subunit for use with a conditional access subunit on an IEEE 1394 network, the subunit including:

10 means to transmit AV/C Conditional Access Commands over the IEEE 1394 network to the conditional access subunit; and

means to receive AV/C responses from the conditional access subunit over the IEEE 1394 network in response to the transmitted AV/C Conditional Access Commands.

15 3. A method of providing a Conditional Access Module on an IEEE 1394 network, the method comprising:

defining a Conditional Access Module as a Conditional Access Subunit of the IEEE 1394 network;

20 providing AV/C Conditional Access Commands to allow communication between the Conditional Access Subunit and other Subunits on the network.

4. A subunit according to claim 1 wherein the AV/C Conditional Access Commands include a CA enable command.

5. A subunit according to claim 4 wherein the AV/C op code for the CA enable command is CC₁₆.

6. A subunit according to claim 4 wherein the CA enable command includes a system ID for identifying the broadcast system to which the command relates.

5 7. A subunit according to claim 4 wherein CA enable control commands include an action operand which is able to represent at least add, update, remove and remove all actions.

10 8. A subunit according to claim 4 wherein CA enable control command responses include an action operand corresponding to the action operand of a received CA enable control command and a status operand wherein, for an action operand representing an add action, the status operand is able to represent at least descrambling, descrambling possible under conditions (purchase dialogue) and descrambling possible under conditions (technical dialogue), for an action operand representing an update action, the status operand is able to represent at least descrambling, descrambling possible under conditions (purchase dialogue) and descrambling possible under conditions (technical dialogue status), for an action operand representing a remove action, the status operand is able to represent at least a remove successful status and, for an action operand representing a remove all action, the status operand is able to represent at least a remove successful status.

15 9. A subunit according to claim 4 wherein CA enable status and notify commands include an action operand able to represent at least one of an add, update, remove and remove all action.

20 10. A subunit according to claim 9 wherein CA enable status and notify command responses include an action operand corresponding to the action operand of the CA enable status and notify command and a status operand wherein, for an action operand representing an add action, the status operand is able to represent at least one of descrambling will be possible, descrambling will be possible under conditions (purchase dialogue), descrambling will be possible under conditions (technical dialogue), descrambling will not be possible, descrambling will not be possible (because no entitlement), descrambling

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will not be possible (for technical reasons), descrambling will not be possible (insufficient bandwidth in CA subunit) and descrambling will not be possible (incompatible CA system) and for an action operand representing an update action, the status operand is able to represent at least descrambling will be possible, 5 descrambling will be possible under conditions (purchase dialogue), descrambling will be possible under conditions (technical dialogue), descrambling will not be possible, descrambling will not be possible (because no entitlement), descrambling will not be possible (for technical reasons), descrambling will not be possible (insufficient bandwidth in CA subunit) and descrambling will not be possible 10 (incompatible CA system).

11. A subunit according to claim 4 wherein the CA enable command includes a service ID operand for specifying the service to which the program map PID is applicable.

12. A subunit according to claim 4 15 wherein the CA enable command includes an operand for specifying the number of elementary PID definitions to follow, together with operands including elementary PID definitions.

13. A subunit according to claim 12 wherein each of the elementary PID definitions include a stream type operand for identifying the type of 20 service element carried within the packets with the PID whose value is specified by the elementary PID and elementary PID operands for specifying the PID of the transport stream packets that carry the associated service element.

14. A subunit according to claim 1 wherein the AV/C Conditional Access Commands include a CA entitlement command.

15. A subunit according to claim 14 wherein the AV/C 25 opcode for the CA entitlement command is CD₁₆.

16. A subunit according to claim 14 wherein the CA entitlement command includes a system ID for identifying the broadcast system to which the command relates.

5 17. A subunit according to claim 14 wherein the CA entitlement command includes operands defining broadcast systems specific data.

18. A subunit according to claim 17 wherein the broadcast systems specific data is able to represent at least the network ID, the original network ID, the transport stream ID, the service ID and the event ID.

10 19. A subunit according to claim 14 wherein, for a CA entitlement command response, the response has an operand able to represent entitlement status.

15 20. A subunit according to claim 19 wherein the entitlement status operand is able to represent at least entitlement unknown, entitlement available, entitlement not available, user dialogue required, user dialogue complete unknown, user dialogue complete available and user dialogue complete not available.

21. A subunit according to claim 1 wherein the AV/C Conditional Access Commands include a security command.

20 22. A subunit according to claim 21 wherein the AV/C opcode for the security command is OF_{16} .

23. A subunit according to claim 20 wherein the security command includes operands for defining authentication and key exchange protocols.

24. A subunit according to claim 21 wherein the subunit will only transmit data once it has received appropriate authentication from the receiving subunit.

5 25. A conditional access subunit for connection to an IEEE 1394 network for use in descrambling a transport stream received over the network wherein the conditional access subunit, having descrambled the transport stream, introduces a local scrambling before retransmitting the transport stream to other subunits on the network, such that only authorised subunits on the network capable of local descrambling can receive the information in the transport stream.

10 26. A conditional access subunit for connection to an IEEE 1394 network having a tuner subunit, the conditional access subunit having means for periodically contacting the tuner subunit to request the received transport stream for a period of time sufficient to allow the conditional access subunit to update the entitlement management messages stored in the conditional access subunit.

15 27. An IEEE 1394 network including a conditional access subunit according to claim 26, a tuner subunit and a control subunit wherein the control subunit ensures that the request from the conditional access subunit to the tuner unit does not cause the tuner unit to change channel while a user is making use of a particular service.

20 28. A tuner device having an embedded conditional access subunit according to claim 1.